PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

IN THE APPLICATION OF:

JAMES EDMOND VAN TRUMP

CASE NO.: CL2121USNA APPLICATION NO.: 10/719607

CONFIRMATION NO.: 3125 GROUP ART UNIT: 1732

EXAMINER: LEO B. TENTONI FILED: NOVEMBER 21, 2003

FOR: PROCESS FOR PREPARING BICOMPONENT FIBERS HAVING LATENT CRIMP

**REPLY BRIEF PURSUANT TO 37 C.F.R. §41.41**

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is in response to the Examiner's Answer dated October 4, 2007. Therefore, the due date for filing this Reply Brief is December 4, 2007.

No fee is believed to be due with this Brief. However, if any fee is due, please charge the fee to Deposit Account No. 50-3223.

## 1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Invista North America S.à r.l., a *société à responsabilité limitée*, incorporated under the laws of Luxembourg, having acquired rights from E.I. DuPont De Nemours and Company by way of an assignment recorded in the United States Patent and Trademark Office at Reel 015286, Frame 0708, having acquired rights from the inventor by way of an assignment recorded in the United States Patent and Trademark Office at Reel 014581, Frame 0026.

## 2. RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are known to the Appellant or to Appellant's legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.

## 3. STATUS OF THE CLAIMS

Claims 1-8 are currently pending in the application. Claims 1-8 stand finally rejected. The rejections of Claims 1-8 are being appealed.

## 4. STATUS OF AMENDMENTS

No amendments have been made to the claims subsequent to the final rejection.

## 5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention provides a method for preparing a polyester bicomponent fiber such that the latent shrinkage of the fiber is maximized. The method includes combining at least two crystallizable polyester polymers, melting the polyester polymers, causing the molten polymers to flow through a spinneret having one or more apertures, where the spinneret is suitable for preparing bicomponent fibers, and spinning at least one strand of 0.5 to 6 denier fiber said strand being spun at a linear rate of ±10% of the maximum shrinkage spinning rate, where the two crystallizable polyester polymers differ from one another in crystallization rate under the spinning conditions. Specification p. 1, line 32 to p. 2, line 4.

The method is conducted by preparing the fiber at a linear rate of ±10% the maximum shrinkage spinning rate (MSSR). As stated in the specification at page 5, lines 3-5, it was not previously known that an MSSR existed. The method includes first determining the MSSR by measuring, analyzing, and considering several factors such as the ratio of crystallization rates of the two polymers, the absolute magnitude of the crystallization rate of the faster-to-crystallize component, the thickness or denier of the fiber being produced, the spinning

temperature, and the type of quench imposed on the moving fiber line. This method is described in the examples at p. 7, line 7 to p. 13, line 14.

## 6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The issues on appeal have been amended to reflect the withdrawal of the rejections under 35 U.S.C. §102. These issues include include:

I. Withdrawn

II. Withdrawn

III. Withdrawn

IV. Are claims 1-8 obvious under 35 U.S.C. §103(a) over any one of (a) EP 1 059 372 to Ochi et al. ("Ochi"), (b) U.S. Patent Application Publication No. 2003/0052436 to Koyanagi et al. ("Koyanagi"), and (c) U.S. Patent Application Publication No. 2002/0025433 to Chang et al. ("Chang"), individually?

## 7. ARGUMENTS

IV. Claims 1-8 are not obvious over any one of Ochi, Koyanagi, and Chang, individually.

Claims 1-8 have also been rejected under 35 U.S.C. §103(a) as obvious in view of any one of Ochi, Koyanagi, and Chang, individually. This rejection is respectfully traversed on the grounds that the Examiner has failed to establish a *prima facie* case of obviousness.

In order to establish a *prima facie* case of obviousness, a reference or combination of references must disclose, teach or suggest every element of the present claims. Each of Ochi, Koyanagi and Chang fails to disclose, teach or suggest a method for determining the MSSR. No single reference or combination of references discloses, teaches, or suggests all elements of the present claims, the references each fail to establish a *prima facie* case of obviousness.

The present invention provides a method for preparing a bicomponent fiber such that the latent shrinkage of the fiber is maximized. The method is conducted by preparing the fiber at the MSSR, by first determining the MSSR which includes analyzing and considering several factors such as the ratio of crystallization rates of the two polymers, the absolute magnitude of the crystallization rate of the faster-to-crystallize component, the thickness or denier of the fiber being produced, the spinning temperature, and the type of quench imposed on the moving fiber line. The Examiner's agrees that the MSSR is not explicitly disclosed in any of the references.

It was not previously known that an MSSR existed. The recognition of a previously unknown result-effective variable is itself an indication that methods of calculating that variable are not inherent and also not obvious.

Claim 1 includes a step for determining the maximum shrinkage spinning rate (MSSR) of the polymers to be combined in a bicomponent fiber. The Appellant has discovered that when preparing bicomponent fibers from polymers which differ in crystallization rates, a higher degree of latent shrinkage of the fiber may be achieved when the spinning speed varies only by ±10% from the MSSR. Determining the MSSR prior to spinning the fiber is essential to ensure maximization of the degree of latent shrinkage of the fiber.

As previously stated, none of Ochi, Koyanagi, and Chang disclose, teach or suggest that the latent shrinkage of the bicomponent fiber may be maximized by first determining the MSSR. Further, the references fail to teach or suggest how the MSSR may be determined or what factors may be considered in the determination. Therefore, the references fail to provide all elements of the present claims and fail to render the claims obvious.

There are two points of novelty in claim 1 that are directed to the MSSR. These are (1) determining a maximum shrinkage spinning rate for the polymers to be included in a bicomponent fiber, and (2) spinning the fiber at a linear rate of ±10% of the maximum shrinkage spinning rate.

The Examiner seems to be focusing on the second point, which is that the references and the present invention are all relevant to spinning bicomponent fibers. On page 9 of the Examiner's Answer, the Examiner responds to Appellant's claim that the references do not disclose a method of determining MSSR with, "the instant claims do not recite a method for determining MSSR, but rather recite a step of determining MSSR." It is not clear to the Appellant what distinction the Examiner is making. Appellant is assuming that the Examiner is not alleging that the claim limitation of "determining the MSSR" is not enabled, since this rejection has not been made. Therefore, Appellant believes that the Examiner is addressing the fact that it is possible that the references disclose spinning fibers within a linear rate of ±10% of the maximum shrinkage spinning rate.

The Examiner points out that the spinning rate disclosed by Koyanagi is preferably no greater than 2000 meters/min, Ochi teaches a spinning rate of at least 1200 meters/min, and

Chang teaches a spinning rate of 700-3500 meters/min. The Examiner argues that the to spin at a linear rate of linear rate of ±10% of the maximum shrinkage spinning rate would have been obvious in view of Ochi, Koyanagi or Chang because the spinning rates overlap with spinning rates discussed in the present specification and because Ochi, Koyanagi and Chang teach achieving a desired level of crimp.

Important to consider is that the desired level of crimp as sought by Ochi, Koyanagi and Chang, appears to differ. For example, the range of Chang includes spinning rates that are below those preferred by Ochi and above those preferred by Koyanagi. It is likely to expect that a desired level of crimp and the specific spinning rate will depend on a number of factors such as the types of polymers that are used. However, none of the teachings of Ochi, Koyanagi or Chang addresses the issue of maximizing the crimp level for a combination of polyester polymers having a different rate crystallinity. It cannot be inferred from the references that the individual desired levels of crimp in each reference are the same as the maximum level of crimp that could be achieved.

Moreover, even if it is assumed, for the sake of argument, that the spinning rate which is ±10% of the maximum shrinkage spinning rate for any particular bicomponent fiber is inadvertently achieved by any of Ochi, Koyanagi, and Chang. Each of Ochi, Koyanagi and Chang still fail to teach the step of determining the maximum shrinkage spinning rate. Appellant reiterates the point that Claim requires the MSSR be determined as a positive step in the claim.

None of the references teaches that there is a spinning rate for a bicomponent fiber at which the latent crimp of the fiber is maximized. Present claim 1 requires (1) determining the spinning rate (which Appellant has referred to as the maximum shrinkage spinning rate) and then (2) spinning at linear rate of ±10% of the maximum shrinkage spinning rate. Spinning at any particular rate that may fall within (2), is not sufficient to meet the claim limitation (1) of determining the maximum shrinkage spinning rate, because this separate analysis was not completed, disclosed or taught by any of Ochi, Koyanagi and Chang.

The claim limitation of determining the MSSR is not inherent in the references for the reasons stated in the Appeal Brief.

## CONCLUSION

In view of the remarks set forth above, reconsideration and withdrawal of the rejections are appropriate and respectfully requested. Appellant submits that the present claims are patentably distinct over the art and in allowable form. Early allowance is, therefore, solicited. If the Examiner has any questions regarding this Reply Brief, the Examiner is invited to contact the undersigned attorney.

Date: 12/4/2007

Respectfully submitted,

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## 8. CLAIMS APPENDIX

1. (previously presented) A process for preparing polyester bicomponent fibers the process comprising combining at least two crystallizable polyester polymers, determining a maximum shrinkage spinning rate of said polymers, melting said polyester polymers, causing said molten polymers to flow through a spinneret having one or more apertures, said spinneret being suitable for preparing bicomponent fibers, thereby spinning at least one strand of 0.5 to 6 denier fiber said strand being spun at a linear rate of ±10% of the maximum shrinkage spinning rate, said two crystallizable polyester polymers differing from one another in crystallization rate under the spinning conditions.

2. (original) The process of Claim 1 wherein the at least two crystallizable polyester polymers are selected from the group consisting of polyethylene terephthalate, polypropylene terephthalate, and polybutylene terephthalate.

3. (original) The process of Claim 2 wherein one crystallizable polyester polymer is polyethylene terephthalate, and another crystallizable polyester polymer is polypropylene terephthalate.

4. (original) The process of Claim 2 or Claim 3 wherein the weight ratio of the two polyesters in the bicomponent fibers made by the process of the invention is in the range of 30/70-70/30.

5. (original) The process of Claim 2 or Claim 3 wherein the weight ratio of the two polyesters in the bicomponent fibers made by the process of the invention is in the range of 40/60-60/40.

6. (original) The process of Claim 2 or Claim 3 wherein the weight ratio of the two polyesters in the bicomponent fibers made by the process of the invention is in the range of 45/55-55/45.

7. (original) The process of Claims 1, 2, or 3 wherein the at least two crystallizable polyester polymers differ in intrinsic viscosity.

8. (original) The process of Claim 1 or Claim 3 further comprising the step of heating the thus prepared polyester bicomponent to a temperature above the glass-transition temperature of the less crystallized component to effect shrinkage and crimping of said fiber.

9. (canceled)

## 9. EVIDENCE APPENDIX

No additional evidence was submitted in this application including evidence pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132.

## 10. RELATED PROCEEDINGS APPENDIX

No related appeals or interferences are known to Appellant or Appellant's legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.